



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/738,344	12/17/2003	Arianna T. Morales	GP-302303	9697

7590 06/01/2007  
Kathryn A. Marra  
300 Renaissance Center  
Mail Code 482-C23-B21  
P.O. Box 300  
Detroit, MI 48265-3000

EXAMINER
----------

ZIMMERMAN, JOHN J

ART UNIT	PAPER NUMBER
----------	--------------

1775

MAIL DATE	DELIVERY MODE
-----------	---------------

06/01/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/738,344

**Applicant(s)**

MORALES ET AL.

**Examiner**

John J. Zimmerman

**Art Unit**

1775

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 2/12/07 (RCE papers).
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-14,16 and 17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-2, 4-14 and 16-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/17/03 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **FIFTH OFFICE ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission titled "AMENDMENT AFTER FINAL" received February 12, 2007 has been entered as requested in the Request for Continued Examination (Form PTO/SB/30).

### ***Amendments***

2. This Fifth Office Action is in response to the remarks and amendments submitted in applicant's communication titled "AMENDMENT AFTER FINAL" received February 12, 2007. Claims 1-2, 4-14 and 16-17 are pending in this application.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

Art Unit: 1775

such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-2, 4-14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seeliger (U.S. Patent 6,090,232) in view of Rashid (U.S. Patent 6,253,588).
5. Seeliger discloses a metal foam composite having a curvilinear shape (e.g. see column 3, lines 13-17; Figure 2). The foam metal can be made from a metal powder such as alloyed aluminum and light metal alloys (a term used in the metallurgical art to refer to alloys such as aluminum alloys) can be used for the solid metal sheets (e.g. see column 2, lines 14-20). The foam layer can be made by mixing the metal powder with a blowing agent (e.g. see column 2, lines 42-48) to form a foamable semi-finished product. The layers are assembled as shown in Figure 2. The composite is molded into a formed semifinished product (e.g. column 3, lines 13-18) and the semifinished product is placed in the cavity of a foaming mold for in situ foaming and final forming (e.g. see column 3, lines 42-49). Foam alloys of the types described would be expected to have metallic microphases (e.g. applicant's claim 8). Seeliger discloses that the blowing agent is a metal hydride in the prior art (e.g. see column 1, lines 16-23). Seeliger discloses that his metal foam composite can be used for car body panels in providing crash protection (e.g. see column 4, lines 31-44). Seelinger may differ from the claims in that Seelinger may not disclose the use of superplastic or quick plastic deforming to shape the semifinished product before the foaming step. Rashid, however, discloses that car body panels made with sheet metal can be made more easily using superplastically formable metal materials (e.g. see column 1, first paragraph) and quick plastic forming processes (e.g. see column 1, lines

Art Unit: 1775

5-12). Processing steps, forming steps and conditions are disclosed by Rashid (e.g. see claims 1-14). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use superplastically formable metal materials for the car body panels of Seeliger because Rashid discloses that superplastically formable materials have processing advantages over in car body panel manufacture if complex shapes are needed. In view of the advantages disclosed by Rashid, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use superplastic or quick plastic deforming to shape the semifinished product of Seeliger because the semifinished products could be made in complex shapes that would be suitable for automobile parts. As disclosed by Seeliger, the semifinished product would then be placed in a mold cavity to perform the foaming step that would result in a cohesive foamed composite structure.

6. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seeliger (U.S. Patent 6,090,232) in view of Baumeister (U.S. Patent 5,151,246) and further in view of Rashid (U.S. Patent 6,253,588).

7. Seeliger discloses a metal foam composite having a curvilinear shape (e.g. see column 3, lines 13-17; Figure 2). The foam metal can be made from a metal powder such as alloyed aluminum and light metal alloys (a term used in the metallurgical art to refer to alloys such as aluminum alloys) can be used for the solid metal sheets (e.g. see column 2, lines 14-20). The foam layer can be made by mixing the metal powder with a blowing agent (e.g. see column 2, lines 42-48) to form a foamable semi-finished product. The layers are assembled as shown in

Art Unit: 1775

Figure 2. The composite is molded into a formed semifinished product (e.g. column 3, lines 13-18) and the semifinished product is placed in the cavity of a foaming mold for in situ foaming and final forming (e.g. see column 3, lines 42-49). Foam alloys of the types described would be expected to have metallic microphases (e.g. applicant's claim 8). Seeliger discloses that the blowing agent is a metal hydride in the prior art (e.g. see column 1, lines 16-23), but does not disclose that the blowing agent is specifically titanium hydride as required by applicant's claim 17. Baumeister, however, discloses that titanium hydride blowing agent is a conventional metal hydride blowing agent that is used with aluminum alloy powders in the prior art (e.g. see Examples 1-7) and Baumeister also discloses typical foaming temperatures for various metal powder and blowing agent mixtures. In view of Baumeister, the use of a mixture of aluminum alloy powder with a titanium hydride blowing agent would have been obvious to one of ordinary skill in the art at the time the invention was made for the metal foam composite of Seeliger because Baumeister shows titanium hydride to be a common metal hydride blowing agent in the prior art and Baumeister also supplies further details on making metal foam compositions and their processing temperatures that Seeliger omits. Seeliger discloses that his metal foam composite can be used for car body panels in providing crash protection (e.g. see column 4, lines 31-44). Seeliger may differ from the claims in that Seeliger may not disclose the use of superplastic or quick plastic deforming to shape the semifinished product before the foaming step. Rashid, however, discloses that car body panels made with sheet metal can be made more easily using superplastically formable metal materials (e.g. see column 1, first paragraph) and quick plastic forming processes (e.g. see column 1, lines 5-12). Processing steps, forming steps and conditions are disclosed by Rashid (e.g. see claims 1-14). It would have been obvious to one

Art Unit: 1775

of ordinary skill in the art at the time the invention was made to use superplastically formable metal materials for the car body panels of Seeliger because Rashid discloses that superplastically formable materials have processing advantages over in car body panel manufacture if complex shapes are needed. In view of the advantages disclosed by Rashid, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use superplastic or quick plastic deforming to shape the semifinished product of Seeliger because the semifinished products could be made in complex shapes that would be suitable for automobile parts. As disclosed by Seeliger, the semifinished product would then be placed in a mold cavity to perform the foaming step that would result in a cohesive foamed composite structure.

### ***Response to Arguments***

8. Applicant's arguments filed February 12, 2007 have been fully considered but they are not persuasive.

9. The judicially created doctrine of obviousness-type double patenting over U.S. Patent Application Serial No. 10/738,345 (now U.S. Patent Number 7,100,259) has been overcome by the terminal disclaimer received February 12, 2007.

10. Regarding the rejection of the claims under 35 U.S.C. 103(a) as being unpatentable over Seeliger (U.S. Patent 6,090,232) in view of Rashid (U.S. Patent 6,253,588), applicant argues that while Rashid and Seeliger disclose the formation of stamped body panels, there is neither motivation nor teachings that super or quick plastic formation is even possible with the addition

Art Unit: 1775

of a metal foam precursor coupled to the sheet metal. Applicant asserts that the processes and parameters disclosed in Rashid are specific to quick plastic formation which is highly dependent on materials selected, air flow across the metal sheet, pressure applied to the metal sheet, and other processing variables. Applicant argues that Seeliger, on the other hand, uses a completely different, yet highly specific, multiple mold process to first shape the component and then to foam the component and that there is clearly no teaching that the formation of a metal foam as taught in Seeliger is desirable or even possible with the Rashid processes. In response to applicant's arguments, the examiner notes Rashid clearly discloses advantages of using superplastically formable and quick plastically formable materials and processes for car body panel manufacture and therefore there is clear motivation to use such processes and materials for making the car body panels envisioned by Seeliger. While Rashid's equipment and processes are specific, nothing in the teachings of Rashid preclude the use of his process with precursor foam core panels and the potential advantages of Rashid's process would clearly outweigh reservations. Obviousness does not require absolute predictability of success; instead, all that is required is there be a reasonable expectation of success. *In re O'Farrell*, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988). It should also be noted that a review of applicant's own disclosure shows no disclosed unobvious modifications which were necessary, and no unforeseen problems occurred, when using superplastic or quick plastic forming materials and processes with precursor foam core composites. Contrary to applicant's assertions, there is no disclosed art recognized aversion to using superplastic or quick plastic processes with precursor foam core composites and it appears that, in indeed, such processes actually appear to require no unobvious modification when used with such composites. Quick plastic forming processes are well known and



Art Unit: 1775

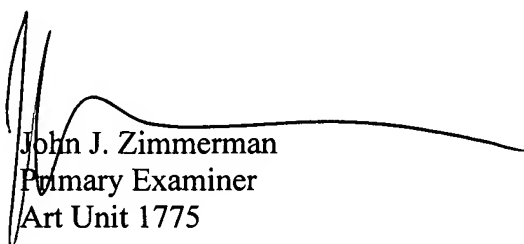
understood by those skilled in art. Evidence of the level of skill in the quick plastic forming art is that applicant's own disclosure is assumed to be enabling for quick plastic forming while disclosing very limited information (if any) on material selection, airflow across the metal sheet, pressure applied to the metal sheet and other processing variables. Therefore, for applicant's own disclosure to be enabling, it must be assumed that these selections and variables are indeed within the purview of the skilled metallurgist. It is inconsistent for applicant to argue that these selections and variables are not within the purview of the skilled metallurgist when discussing the applied prior art, and yet fail to disclose these selections and variables when presenting applicant's own invention.

### *Conclusion*

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John J. Zimmerman whose telephone number is (571) 272-1547. The examiner can normally be reached on 8:30am-5:00pm, M-F. Supervisor Jennifer McNeil can be reached on (571) 272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1775

12. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



John J. Zimmerman  
Primary Examiner  
Art Unit 1775

jjz  
May 29, 2007